Date: Sunday 15/Jul/2019

6:00pm - 9:00pm	**Registration and Get Together** Location: **"The Multibody-Tent": Get-Together Place of daily lunch (shown on the map)**

Date: Monday, 15/Jul/2019

8:15am - 8:30am	**Opening Ceremony** Location: **BA 026** Chair: **Andrés Kecskeméthy**			
8:30am - 9:15am	**Keynote 1 "Memorial Lecture Prof. Manfred Hiller"** Location: **BA 026** **Alberto Cardona** **The nonsmooth generalized-α method for flexible and rigid multibody system dynamics**			
9:25am - 10:45am	**VEHICLE-1: Applications in Vehicle Dynamics and Aerospace Devices** Location: **BA 127** Chair: Oliver José Verlinden	**BIOMECH-1: Biomechanics** Location: **BA 143** Chair: Paulo Flores	**MECHATR-1: Mechatronics, Robotics and Control** Location: **BA 152** Chair: Andreas Müller	**NUMMETH-1: Formulations and Numerical Methods** Location: **BA 039** Chair: Olivier Bauchau
	Dynamic Interaction of Heavy Duty Vehicles and Expansion Joints **Daniel Rill, Christiane Butz, Georg Rill**	**Evaluation of ground reaction forces using a rigid foot/ground contact model** **Romain Van Hulle, Cédric Schwartz, Olivier Brüls**	**Possibilistic investigation of mechanical control systems under uncertainty** **Andreas Hofmann, Michael Hanss, Peter Eberhard**	**Hidden constraints and their time-discrete counterparts** **Martin Arnold**
	Non-Gaussian Random Road Model for Simulation of Transport Vehicle **Hiroaki Hoshino, Masahiro Takagi, Akira Hosoyama**	**Parameter identification for a symbolic ellipsoidal volumetric foot-ground contact model using direct collocation method** **Mahdokht Ezati, Borna Ghannadi, John McPhee**	**An inverse dynamic approach for the trajectory tracking problems of multibody systems** **Xian Guo, Dingguo Zhang, Yongbin Guo, Liang Li**	**BDF and Newmark-type index-2 and index-1 Integration schemes for constrained mechanical systems** **Tobias Oliver Meyer, Pu Li, Bernhardt Schweizer**
	Evaluation of friction characteristics in steering system using steering torque simulator with multibody kinematic model **Sena Inoue, Yuta Tsuchiya, Hiroki Tanaka, Yuri Umetsu, Hayato Otsuka, Taichi Shiiba**	**Impacts versus non-impulsive muscle and joint loads in a two-segmented model of hopping** **Giuseppe Habib, László Bencsik, Tamás Insperger, Ambrus Zelei**	**An individual pitch control concept for wind turbines based on inertial measurement units** **János Zierath, Thorben Kallen, Dirk Machost, Reik Bockhahn, Thomas Konrad, Sven-Rosenow, Uwe Jassmann, Dirk Abel**	**An explicit integrator for differential algebraic equations for multibody system dynamics** **Hui Ren, Ping Zhou**
	FreeDyn - A software for advanced multibody simulation: Applications in the field of vehicle dynamics **Stefan Oberpeilsteiner, Thomas Lauß, Philipp Eichmeir, Wolfgang Steiner**	**Force approximation of the hand on the climbing wall handle** **Grzegorz Orzechowski, Perttu Hämäläinen, Aki Mikkola**	**The development of an efficient drivetrain system analysis tools for NVH** **Juhwan Choi, Jin-Gyun Kim, Jin Hwan Choi**	**Lie Group Variational Integrators for Constrained Mechanical Systems Applied to a Constrained Cosserat Rod Model** **Stefan Hante, Martin Arnold**
10:45am - 11:15am	**Coffee Break**			

Date: Monday, 15/Jul/2019

11:15am - 12:35pm	**VEHICLE-2: Applications in Vehicle Dynamics and Aerospace Devices** Location: **BA 127** Chair: Jorge Ambrósio	**BIOMECH-2: Biomechanics** Location: **BA 143** Chair: Ettore Pennestri	**MECHATR-2: Mechatronics, Robotics and Control** Location: **BA 152** Chair: Robert Seifried	**NUMMETH-2: Formulations and Numerical Methods** Location: **BA 039** Chair: Jozef Kövecses
	Multibody model of railroad vehicle suspension systems using track-frame coordinates **José Luis Escalona, Pedro Urda, Eduardo Briales**	**A detailed kinematic multibody model of the shoulder complex after total shoulder replacement** **Christoph Woernle, Sven Herrmann, Märuan Kebbach, Robert Grawe, Katrin Ingr, Rainer Bader**	**Investigation of the behavior of vibration-damped flexible link robots in end-effector contact: Simulation and experiment** **Florian Pucher, Hubert Gattringer, Andreas Müller**	**An inherent stochastic model for nonlinear control of underactuated multibody systems** **Guaraci Jr. Bastos**
	Kalman filter estimation of lateral track irregularity **Sergio Muñoz, Javier Ros, José Luis Escalona**	**Design and development of a medical device to support the diagnosis of the shoulder instability** **Paula Vilaca, Oscar Carvalho, Paulo Flores, Renato Andrade, Nuno Sevivas, Joao Espregueira-Mendes**	**Dynamic modeling and experimental validation of a single-link flexible manipulator** **Paramanand Nandihal, Vikash Kumar, Subir Kumar Saha, Ashish Singla, S. P. Singh, Tarun Kumar Bera**	**Modeling and numerical simulation for Euler disk based on the LuGre friction model** **Zhen Zhou**
	Multibody dynamics analysis of railway vehicle with independently rotating wheels using negative tread conicity **Yu Wang, Shihpin Lin, Hiroshi Tajima, Yoshihiro Suda**	**A unified human-robot dynamics model to control an upper extremity rehabilitation manipulandum** **Borna Ghannadi, Sadegh Tajeddin, Reza Sharif Razavian, John McPhee**	**Experimental study on an elastic mechanical system showing chaotic dynamical behavior** **Hartiny Kahar, Dirk Söffker**	**Mathematical model of a crane with taking into account friction phenomena in actuators** **Andrzej Urbaś, Krzysztof Augustynek**
	Effect of applied force co-simulation schemes on recoupled vehicle/track problem **Bryan Olivier, Olivier Verlinden, Georges Kouroussis**		**Stiffness analysis of a new 3T1R asymmetrical parallel mechanism with low coupling degree** **Huiping Shen, Guanglei Wu, Zhengxiao Xu**	**Dynamic modelling of lower mobility parallel manipulators** **Haitao Liu, Weifeng Chen, Tian Huang, Andres Kecskemethy**
12:35pm - 2:00pm	**Lunch Break**			
2:00pm - 9:30pm	**Boat Trip and Reception**			

Date: Tuesday, 16/Jul/2019

8:30am - 9:15am	**Keynote 2** Location: **BA 026** **Gabor Stepan** **Non-smooth bifurcations in delayed tyre models of wheel shimmy**			
9:25am - 10:45am	**FLEXIMD-1: Flexible Multibody Dynamics** Location: **BA 127** Chair: Michal Hajzman	**VEHICLE-3: Applications in Vehicle Dynamics and Aerospace Devices** Location: **BA 143** Chair: Georg Rill	**NUMMETH-3: Formulations and Numerical Methods** Location: **BA 152** Chair: Jacob Philippus Meijaard	**EFFSIMS-1: Efficient Simulation and Real-Time Applications** Location: **BA 039** Chair: Jin-Hwan Choi
	Inertia-shape-integral-free derivation of the floating frame of reference formulation **Andreas Zwölfer, Johannes Gerstmayr**	**A study on the behavior of the rotating disc with the damage on the tread** **Yasutaka Maki, Yoshiaki Terumichi**	**Numerical damping caused by violation of hidden constraints in multibody dynamics** **Wan-Suk Yoo, Yeon-Geol Hwang, Samuel Jung**	**Coupled Real-Time Simulation Hydraulically Driven Crane Based on Functional Mockup Unit** **Manouchehr Mohammadi, Mehran Kiani, Asko Rouvinen, Payman Jalali, Aki Mikkola**
	On the geometric interpretation and simplification of superelements in the floating frame formulation **Marcel Ellenbroek, Jurnan Schilder**	**An innovative tool for simultaneous wheel and rail damage evaluation** **Elisa Butini, Lorenzo Marini, Martina Meacci, Enrico Meli, Andrea Rindi, Zhiyong Shi, W.J. Wang, X.J. Zhao**	**Energy and Symmetry-preserving formulation of nonlinear constraints and potential forces in multibody dynamics** **Juan Carlos García Orden**	**Real-time Capable Calculation of Reaction Forces of Multibody Systems Using Optimized Bushings on the Example of a Vehicle Wheel Suspension** **Frédéric Etienne Kracht, Dieter Schramm**
	Investigation of a Model Update Technique for Flexible Multibody Simulation **Andreas Schulze, Luthe Johannes, Janos Zierath, Christoph Woernle**	**An improved wheel-rail contact model under degraded adhesion condition for multibody dynamics simulation** **Martina Meacci, Zhiyong Shi, Margherita Porcelli, Elisa Butini, Enrico Meli, Andrea Rindi**	**Interior-Point Solver for Non-Smooth MultiBody Dynamics with Finite Elements** **Dario Mangoni, Alessandro Tasora, Simone Benatti**	**A machine learning approach for minimal coordinate multibody simulation** **Andrea Angeli, Frank Naets, Wim Desmet**
	Static deformation of flexure-based mechanisms starting from a kinematic approximation **Koen Dwarshuis, Ronald Aarts, Marcel Ellenbroek, Dannis Brouwer**	**On the two-point wheel-rail contact scenario using the Knife-Edge Contact method** **Javier F. Aceituno, José L. Escalona, Sergio Muñoz, Rosario Chamorro**	**Adjoint sensitivity analysis of the index-3 augmented Lagrangian formulation with projections** **Daniel Dopico, Adrian Sandu, Corina Sandu**	**DARTS - Multibody Modeling, Simulation and Analysis Software** **Abhinandan Jain**
10:45am - 11:15am	**Coffee Break**			

Date: Tuesday, 16/Jul/2019

11:15am - 12:35pm	**FLEXIMD-2: Flexible Multibody Dynamics** Location: **BA 127** Chair: Johannes Gerstmayr	**VEHICLE-4: Applications in Vehicle Dynamics and Aerospace Devices** Location: **BA 143** Chair: Pier Paolo Valentini	**MECHATR-3: Mechatronics, Robotics and Control** Location: **BA 152** Chair: Jörg Fehr	**CONSTRS-1: Contact and Constraints** Location: **BA 039** Chair: Dan Negrut
	Importance of warping in beams with narrow rectangular cross-sections: a numerical and experimental flexible cross-hinge case study **Marijn Nijenhuis, Ben Jonker, Dannis Brouwer**	**Discrete mechanics and optimal control of flapping wing MUAV** **Zdravko Terze, Dario Zlatar, Viktor Pandža**	**Comparison of stable inversion methods for underactuated multibody systems** **Svenja Otto, Robert Seifried**	**Continuous contact force models for the interaction between superellipsoids and nodes** **Jorge Ambrósio**
	Approaches to fibre modelling in the model of an experimental laboratory mechanical system **Pavel Polach, Michal Hajžman, Radek Bulín**	**Algorithmic aspects of multibody helicopter simulation** **Max Kontak, Melven Röhrig-Zöllner**	**Solution techniques for problems of inverse dynamics of flexible underactuated systems** **Timo Ströhle, Peter Betsch**	**Precise and efficient simulation of local contact behavior in reduced multibody systems** **Pascal Ziegler, Peter Eberhard**
	Robust and fast simulation of flexible flat cables **Michael Roller, Christoffer Cromvik, Joachim Linn**	**A precise and effective model for simulating screw drive dynamics** **Tengfei Shi, Bo Wang, Caishan Liu**	**On the modeling of redundantly-actuated mechanical Systems** **Yaojun Wang, Bruno Belzile, Jorge Angeles, Qinchuan Li**	**Multibody dynamics of rolling curves and surfaces using minimal coordinates** **Alina Stepken, Francisco Geu Flores**
	Modified p-version of the non-linear beam finite element allowing a larger time-step size **Sinwoo Jeong, Hong Hee Yoo**	**Multibody models and simulations to assess the stability of counterbalance forklift trucks** **Michele Gardella, Alberto Martini**	**A compliant and redundantly actuated 2-DOF 3RRR PKM: Best of both worlds?** **Robin Cornelissen, Andreas Müller, Ronald Aarts**	**Three dimensional oblique impact with friction within superovoids** **Xinxin Yu, Jose L. Escalona, Marko K. Matikainen, Aki Mikkola**
12:35pm - 2:00pm	**Lunch Break**			

Date: Tuesday, 16/Jul/2019

2:00pm - 3:40pm	FLEXIMD-3: Flexible Multibody Dynamics Location: BA 127 Chair: Wan-Suk Yoo	BIOMECH-3: Biomechanics Location: BA 143 Chair: Christoph Woernle	MECHATR-4: Mechatronics, Robotics and Control Location: BA 152 Chair: Haitao Liu	CONSTRS-2: Contact and Constraints Location: BA 039 Chair: Hamid M. Lankarani
	Extension of the iterative IRS technique to flexible mechanisms Alessandro Cammarata, Rosario Sinatra, Pietro Davide Maddio	**Standardization of simple balancing tasks to comprehend the human controller** Dalma J. Nagy, Laszlo Bencsik, Tamás Insperger	**Multibody dynamics and control of an electromechanical system simulating hyperelastic membranes** Valentina Franchi, Gianpietro Di Rito, Roberto Galatolo, Ferdinando Cannella, Darwin Caldwell, Giovanni Muscolo	**Billion degree-of-freedom granular dynamics simulation on commodity hardware** Conlain Kelly, Nicholas Olsen, Colin Vanden Heuvel, Radu Serban, Dan Negrut
	A model order-reduction method for the simulation of rolling bearing based on Arbitrary Lagrangian-Eulerian formulation Jia-Peng Liu, Xuan-Bo Shu, Aki Mikkola, Ge-Xue Ren	**A Hill muscle actuated arm model with dynamic muscle paths** Johann Penner, Sigrid Leyendecker	**Mechatronic stiffness for cable-driven robots** Michael Valásek	**GPU-based mesh-sphere collision detection in Chrono::Granular** Nicholas Olsen, Conlain Kelly, Dan Negrut
	A projection based Lagrangian framework for comparing (reduced) small deformation flexible multibody modeling approaches Frank Naets, Martijn Vermaut, Wim Desmet	**Optimal control simulations of two-finger precision grasps** Uday Dattaram Phutane, Michael Roller, Staffan Björkenstam, Sigrid Leyendecker	**Negative stiffness mechanisms using noncircular gears** Meng Li, Zhihua Zhao, Ruoxi Wang	**Granular flows vs. fluid flows: a look of similarities and differences** Milad Rakhsha, Conlain Kelly, Nicholas Olsen, Radu Serban, Dan Negrut
	An efficiency analysis of deformation coordinate condensation method for flexible multibody dynamics Jong-Boo Han, Sung-Soo Kim	**Comparison of measured EMG data with simulated muscle actuations of a biomechanical human arm model in an optimal control framework – direct vs. muscle synergy actuation** Marius Obentheuer, Michael Roller, Staffan Björkenstam, Karsten Berns, Joachim Linn	**Torsional negative stiffness mechanism by thin strip** Jinyou Li, Zhihua Zhao, Kangjia Fu, Yongpeng Gu	**Non-smooth numerical solution of frictional contact problems in multibody systems** Javier Galvez, Federico Cavalieri, Alejandro Cosimo, Olivier Bruls, Alberto Cardona
	Towards error estimation in reduced elastic multibody systems Dennis Grunert, Jörg Fehr, Bernard Haasdonk	**Reinforcement learning applied to a human arm model** Michael Burger, Simon Gottschalk, Michael Roller	**Development of electromagnetic circuit breaker drives for energy and mobility turnaround with a systematic cosimulation approach for electromagnetics-mechanics phenomena** Thorsten Schindler, Arda Tueysuez	**Simulation of simultaneous multi-contact collisions in non-smooth contact dynamics** Alejandro Cosimo, Federico Cavalieri, Alberto Cardona, Olivier Brüls

Date: Wednesday, 17/Jul/2019

8:30am - 9:15am	**Keynote 3** Location: **BA 026** **John McPhee** **Multibody dynamics and model-based control of biomechatronic systems**			
9:25am - 10:45am	**FLEXIMD-4: Flexible Multibody Dynamics** Location: **BA 127** Chair: Peter Eberhard	**VEHICLE-5: Applications in Vehicle Dynamics and Aerospace Devices** Location: **BA 143** Chair: Jin-Yang Liu	**NUMMETH-4: Formulations and Numerical Methods** Location: **BA 152** Chair: Marek Wojtyra	**EFFSIMS-2: Efficient Simulation and Real-Time Applications** Location: **BA 039** Chair: Abhinandan Jain
	Incorporation of ANCF-elements in flexible multibody systems which rely on the floating frame of reference formulation **Alexander Held, Robert Seifried**	**System-level parameter identification on a MacPherson suspension using flexible multibody models** **Simon Vanpaemel, Enrico Risaliti, Martijn Vermaut, Frank Naets, Wim Desmet**	**Continuous and discontinuous Galerkin formulation for periodic problems and stability analysis of flexible multibody dynamics** **Shilei Han, Olivier Bauchau**	**Two general index-3 semi-recursive formulations for the dynamics of multibody systems** **Alvaro Lopez, Daniel Dopico, Alberto Luaces Fernandez**
	Modeling the anisotropic viscoelastic behavior of soft tissue in the framework of the absolute nodal coordinate formulation **Leonid Obrezkov, Marko Kalervo Matikainen, Ajay Harish**	**Lateral dynamics of vehicles on a "steerable" roller test stand** **Thomas Tentrup, Burkhard Corves, Jörg Neumann, Werner Krass, Jan-Lukas Archut, Jascha Paris**	**Implementation of linear springs and dampers in a Newmark second order direct integration method for 2D multibody dynamics** **Haritz Uriarte, Igor Fernández de Bustos, Gorka Urkullu**	**Efficient particle simulation using a two-phase DEM-lookup approach** **Jonathan Jahnke, Stefan Steidel, Michael Burger, Bernd Simeon**
	On the use of the strain split method in the large deformation analysis of thick shell structures using ANCF **Jing Zhang, Dingguo Zhang, Liang Li**	**Optimization of geometric parameters and stiffness of multi-universal-joint drive shaft considering the dynamics of driveline** **Xingyang Lu, Tongli Lu, Jianwu Zhang**	**On the numerical treatment of nonlinear flexible multibody systems with the use of Quasi-Newton methods** **Radek Bulín, Michal Hajžman**	**Real time simulation of hydraulic triplex mast unit of 3W counterbalance 2.0 ton forklift** **Qasim Khadim, Kaikko Esa-Pekka, Eero Puolatie, Tero Hukkataival, Aki Mikkola**
	Dynamic analysis of rotating beams with the centrifugal stretching effect **Xiaokang Du, Dingguo Zhang, Yuanzhao Chen, Liang Li**	**Wheel-rail contact force estimation on a scale railway vehicle: Comparison between numerical and experimental results** **Pedro Urda, Jose L. Escalona, Sergio Muñoz, Javier F. Aceituno**	**LU and QR matrix factorizations in dual algebra** **Ettore Pennestri', Pier Paolo Valentini, Marco Cirelli, Rosario Sinatra**	**Real-time validation of a haptic piano key based on multibody model** **Sébastien Timmermans, Anne-Emmanuelle Ceulemans, Bruno Dehez, Paul Fisette**
10:45am - 11:15am	**Coffee Break**			

Date: Wednesday, 17/Jul/2019

11:15am - 12:35pm	**FLEXIMD-5: Flexible Multibody Dynamics** Location: **BA 127** Chair: José Luis Escalona	**BIOMECH-4: Biomechanics** Location: **BA 143** Chair: Francisco González	**MECHATR-5: Mechatronics, Robotics and Control** Location: **BA 152** Chair: Sung-Soo Kim	**CONSTRS-3: Contact and Constraints** Location: **BA 039** Chair: Miguel Silva
	Comparison of plate elements for locking alleviation analysis: Absolute nodal coordinate formulation and geometrically exact formulation **Teng Zhang**	**Analysis of energy consumption of different joints for the biped ascending slopes** **Lulu Gong**	**Toward explicit determination of kinematic model of Exechon like PKM** **Jean-Baptiste Guyon, Benjamin Boudon, Hélène Chanal, Benoit Blaysat**	**Dynamics of machine-process combinations** **Friedrich Gottfried Pfeiffer**
	Dynamic behaviors of composite flexible structure with dielectric elastomer actuator via Absolute Nodal Coordinate Formulation **Haidong Yu, Yunyong Li, Aolin Chen, Hao Wang**	**Calibration of foot-ground and crutch-ground contact models for optimal control prediction of crutch-assisted walking motions** **Míriam Febrer-Nafría, Roger Pallarès-López, Josep M. Font-Llagunes**	**A self-reconfigurable mechanism based on shapeable triangular cells** **Michael Pieber, Johannes Gerstmayr**	**Dynamic modeling and analysis of pool balls interaction** **Eduardo Corral, Raúl Gismeros, Filipe Marques, Paulo Flores, M.J. Gomez Garcia, Cristina Castejon**
	Dynamic analysis of higher-order sandwich beam elements based on the absolute nodal coordinate formulation **Bin Wang, Dingguo Zhang, Liang Li**	**Mechatronics design of a constraint-induced training system for adolescent idiopathic scoliosis and its validation by flexible multibody dynamics** **Jianqiao Guo, Yao Xiao, Wei Guo, Runeng Zhou, Xiaomin Liu, Gexue Ren**	**Haptic simulation of mechanisms** **Jascha Norman Paris, Jan-Lukas Archut, Mathias Hüsing, Bukrhard Corves**	**Using a spectral projected gradient method to simulate masonry structures via non-smooth rigid-body dynamics** **Alessandro Tasora, Gianni Royer, Valentina Beatini**
	Dynamic analysis of compliant mechanisms using sbsolute nodal coordinate formulation and geometrically exact beam theory **Zhigang Zhang, Xiang Zhou, Zhanpeng Fang**	**Multibody analysis of a 3D human model with trunk exoskeleton for industrial applications** **Elisa Panero, Giovanni Gerardo Muscolo, Laura Gastaldi, Stefano Pastorelli**	**Nonlinear position control of a very flexible parallel robot manipulator** **Peter Eberhard, Fatemeh Ansarieshlaghi**	**Modelling contact/impact problems with modified LuGre friction model** **Filipe Marques, Paulo Flores, Hamid M. Lankarani**
12:35pm - 2:00pm	**Lunch Break**			

Date: Wednesday, 17/Jul/2019

2:00pm - 3:40pm	**FLEXIMD-6: Flexible Multibody Dynamics** Location: **BA 127** Chair: Alberto Cardona	**BIOMECH-5: Biomechanics** Location: **BA 143** Chair: Josep M. Font-Llagunes	**MECHATR-6: Mechatronics, Robotics and Control** Location: **BA 152** Chair: Sigrid Leyendecker	**CONSTRS-4: Contact and Constraints** Location: **BA 039** Chair: Friedrich Gottfried Pfeiffer
	Kelvin-Voigt damping parameters for Cosserat rod dynamics Fabio Schneider, Joachim Linn, Fredrik Andersson, Vanessa Dörlich	**Muscle torque generators in multibody dynamic simulations of optimal sports performance** Keaton Inkol, Colin Brown, William McNally, Conor Jansen, John McPhee	**Time optimal control of a single track vehicle using a Pacejka tire model** Philipp Eichmeir, Wolfgang Steiner, Thomas Lauss, Stefan Oberpeilsteiner	**Influence of tip relief in spur gears dynamic using multibody models with movable teeth** Marco Cirelli, Pier Paolo Valentini, Ettore Pennestri
	Localized helix configurations of discrete Cosserat rods Vanessa Dörlich, Tomas Hermansson, Joachim Linn	**Parameter identification of a reduced knee ligament apparatus by means of multibody optimization** Märuan Kebbach, Paul Henke, Evelyn Winter, Andreas Geier, Robert Grawe, Christoph Woernle, Rainer Bader	**Dynamics modelling of rovers for state estimation** Francisco González, Qinfeng Lou, Jozsef Kövecses	**Modeling of elastic cages in the rolling bearing multi-body tool CABA3D** Dmitry Vlasenko, Bodo Hahn
	Updating of finite element models for servo-controlled multibody flexible systems through modal analysis Dario Richiedei, Alberto Trevisani	**Multibody-based quantification of abdominal and back muscle forces for predefined static postures** Simon Hinnekens, Philippe Mahaudens, Christine Detrembleur, Paul Fisette	**A circular terrain-adaptive robot prototype for bumpy 2-D surface** Fei Zhang	**Multibody approach to estimate efficiency of chain power transmission** Shengpeng Zhang, Hyoyeong Heo, Jeongyeol Baek, Taeoh Tak
	Virtual sensing on mechatronic drivetrains using multiphyisical models incorporating flexible multibody models Jelle Bosmans, Martijn Vermaut, Jan Croes, Wim Desmet	**Investigation of inhomogeneous stiffness and damping characteristics of the human stapedial annular ligament** Dmitrii Burovikhin, Benjamin Sackmann, Merlin Schär, Jae Hoon Sim, Peter Eberhard, Michael Lauxmann	**The steering performance analysis of drilling assemblies based on multibody dynamics** Jiaqi Chen, Jiapeng Liu, Zaibin Cheng, Gexue Ren	**Analysis of the influence of the links' flexibility and clearance effects on dynamics of the RUSP linkage** Krzysztof Augustynek, Andrzej Urbaś
	Flexible multibody dynamics of an afterburner-type fairground attraction Jurnan Schilder, Coen Vermeulen	**Toward real-time estimation of total leg compliance during gait** Reza Sharif Razavian, Ning Jiang, John McPhee	**Development of a 2 DOF stabilization platform for a naval radar system** Hunkar Kemal Yurt, Baris Ulutas, Ismail Güler	
3:40pm - 9:30pm	**Excursion and Banquet**			

Date: Thursday, 18/Jul/2019

8:30am - 9:15am	**Keynote 3** Location: **BA 026** **Janet Lenore Ronsky** **Multi-modal approaches to advance insights in aberrant knee joint biomechanics**			
9:25am - 10:45am	**VEHICLE-6: Applications in Vehicle Dynamics and Aerospace Devices** Location: **BA 127** Chair: Michael Valásek	**FLEXIMD-7: Flexible Multibody Dynamics** Location: **BA 143** Chair: Ronald G.K.M. Aarts	**NUMMETH-5: Formulations and Numerical Methods** Location: **BA 152** Chair: Juan Carlos García Orden	**OPTIMIZ-1: Optimization and Sensitivity Analysis** Location: **BA 039** Chair: Pascal Ziegler
	Adjustment of non-holonomic constraints by absolutely inelastic tangent impact in the dynamics of an omni-vehicle **Alexandra A. Zobova, Kirill V. Gerasimov, Ivan I. Kosenko**	**Body-fluid-structure interaction simulation for a trailing-edge flexible stabilizer** **Abolfazl Kiani, Meisam Mohammadi-Amin**	**A regularization method for solving the redundant problems in multibody dynamics system** **Liusong Yang, Wenli Yao, Shifeng Xue**	**The discrete Hamiltonian-based adjoint method for some optimization problems in multibody dynamics** **Pawel Maciąg, Pawel Malczyk, Janusz Fraczek**
	Omni-vehicle dynamical models mutual matching for different roller-floor contact models **Kirill Gerasimov, Alexandra Zobova, Ivan Kosenko**	**Dynamic modelling for the deployment of the folded membrane structure with self-contact** **Tingting Yuan, Jinyang Liu**	**State observation in beam-like structures under unknown excitation** **Johannes Luthe, Andreas Schulze, Roman Rachholz, János Zierath, Christoph Woernle**	**Optimal control of constrained mechanical systems** **Simeon Schneider, Peter Betsch**
	Simulation of the maglev train Transrapid traveling on a flexible guideway using the multibody systems approach **Georg Schneider, Xin Liang, Florian Dignath, Peter Eberhard**	**Dynamic characteristics of helical gear based on arbitrary Lagrangian-Eulerian formulation** **Jia-Wei Liu, Jia-Peng Liu, Jia-Lun Yao, Ge-Xue Ren**	**Uniqueness and parametric sensitivity problems in modeling of static friction in closed-loop multibody systems** **Marek Wojtyra**	**Divide and conquer algorithm for optimal control of multibody systems in the Hamiltonian framework** **Paweł Malczyk, Paweł Maciąg, Janusz Frączek**
		Modeling and dynamic analysis of the dielectric elastomer actuated multibody system **Peng Zhang, Qiang Tian**	**Interface models in co-simulation of nonsmooth multibody systems** **Albert Peiret, Francisco Gonzalez, Jozsef Kövecses, Marek Teichmann**	**Energy expenditure minimization in a Delta2-robot through a mixed approach** **Ilaria Palomba, Giovanni Carabin, Erich Wehrle, Renato Vidoni**
10:45am - 11:15am	**Coffee Break**			

Date: Thursday, 18/Jul/2019

11:15am - 12:35pm	**VEHICLE-7: Applications in Vehicle Dynamics and Aerospace Devices** Location: **BA 127** Chair: Caishan Liu	**BIOMECH-6: Biomechanics** Location: **BA 143** Chair: Aki Mikkola	**NUMMETH-6: Formulations and Numerical Methods** Location: **BA 152** Chair: Martin Arnold	**OPTIMIZ-2: Optimization and Sensitivity Analysis** Location: **BA 039** Chair: Janusz Fraczek
	A full-vehicle motion simulator for railways applications. **Roshan Nitin Pradhan, Subir Kumar Saha, Vishnu Sukumar, S. P. Singh**	**Inverse dynamic analysis of a human planar full body model using fully Cartesian coordinates** **Ivo Fialho Roupa, Sérgio Gonçalves, Miguel Tavares da Silva**	**On the concept of constraints and the foundations of analytical mechanics** **Jozsef Kövecses**	**Dynamic parameters optimization of a Gough-Stewart Platform mounted on a 2-DOF moving base** **Taha Houda, Ali Amouri, Lotfi Beji, Malik Mallem**
	A test framework for the co-simulation of electric powertrains and vehicle dynamics **Borja Rodríguez Frade, Francisco González, Miguel Ángel Naya, Francisco Javier Cuadrado**	**Investigation of tympanic membrane Influences on middle-ear impedance measurements and simulations** **Benjamin Sackmann, Birthe Warnholtz, Jae Hoon Sim, Dmitrii Burovikhin, Ernst Dalhoff, Peter Eberhard, Michael Lauxmann**	**Alternative power-law formulations for system level topology optimization in a strongly coupled approach** **Karim Asrih, Frank Naets, Wim Desmet**	**Partial shaking force balancing of 3-RRR parallel manipulators by optimal acceleration control of the total center of mass** **Jing Geng, Vigen Arakelian**
	Formulas and vehicles – A teaching project for autonomous driving as example for facing fast evolving research fields **Robert Seifried, Timo Reis, Svenja Otto, Daniel Dücker, Alexander Schmitt**	**Anterior cruciate ligament injuries alter the kinematics and kinetics of knees with or without meniscal deficiency** **Xiaode Liu, Hongshi Huang, Shuang Ren, Yingfang Ao, Qiguo Ron**	**Modelling rigid and flexible bodies with truss elements** **Jacob Philippus Meijaard**	**Training a four-legged robot via deep reinforcement learning and multibody simulation** **Simone Benatti, Alessandro Tasora, Dario Mangoni**
	Application of multibody dynamics in the modelling of a limited-slip differential **Michal Hajžman, Radek Bulín, Štěpán Dyk**	**Application of OpenPose deep learning algorithm for gait parameter identification** **Athanasios Mastrogeorgiou, Aikaterini Smyrli, Evangelos Papadopoulos, Andrés Kecskeméthy, Silke Gegenbauer**	**Closed Form of the Baker-Campbell-Hausdorff formuła for the Lie algebra of rigid body displacements** **Daniel Condurache, Adrian Ciureanu**	
12:35pm - 2:00pm	**Lunch Break and Closing Ceremony** Chair: **Andrés Kecskeméthy**			